

The Use of Cash in Canada

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- The market share of cash in terms of the number of retail transactions continues to decrease, according to the Bank of Canada's most recent Methods-of-Payment Survey. Increased use of credit cards, particularly contactless credit cards, was a key factor in this development.
- The cash share of the value of retail purchases was, however, virtually unchanged from 2009 to 2013. In particular, the value share of cash transactions above \$50 has increased.
- Automated banking machines (ABMs) remain the major source of cash for Canadians, although people were using ABMs less often in 2013, compared with the previous survey in 2009.
- Cash use in Canada appears to be broadly similar to that in Australia and the United States.

The objective of this article is to study cash use in Canada. The Bank of Canada, as the sole issuer of Canadian bank notes, needs to understand the public's demand for cash. However, measuring cash use is difficult because it is an anonymous payment method. Given this, cash use is typically inferred through indicators such as aggregate cash withdrawals from automated bank machines (ABMs). Because of their aggregate nature, such measures do not provide any information on the typical characteristics of the users of cash. The Bank has therefore commissioned the Methods-of-Payment (MOP) Survey, first conducted in 2009 and repeated in 2013.

A key component of these surveys is the payment diary, in which users record all their cash and non-cash payments over a three-day period.¹ These surveys provide a detailed picture of the demand for cash and the characteristics of its users. By comparing the results from 2013 with those from 2009, we assess shifts in the use of cash and changes in cash-management practices, as well as the impact of innovative payment instruments such as contactless payment cards.

◀ *The Methods-of-Payment surveys provide a detailed picture of the demand for cash and the characteristics of its users*

¹ Bagnall et al. (2014) provide a detailed discussion of how extensively other central banks and organizations are using this methodology to measure cash and non-cash payments. Arango and Welte (2012) provide a discussion of the 2009 MOP Survey.

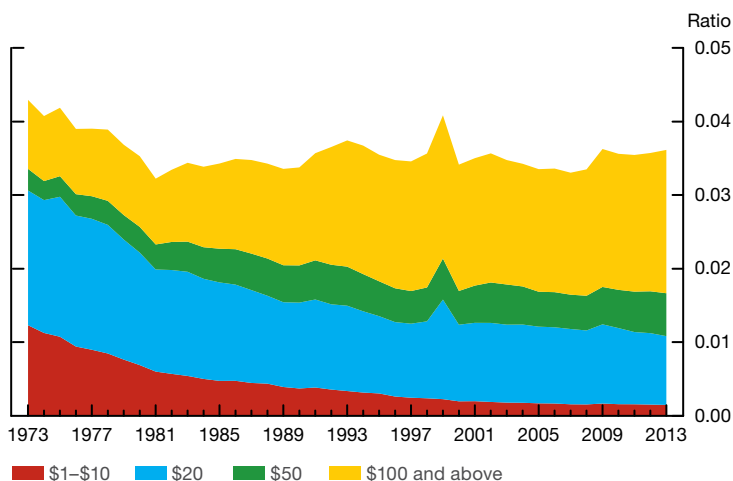
The article begins with a review of the Canadian retail payment landscape, followed by a brief overview of the 2013 MOP Survey methodology and findings. We then compare retail payment behaviour in Canada, Australia and the United States, based on payment survey data for all three countries. Finally, we provide some concluding remarks.

Retail Payment Landscape

The gradual shift away from cash toward electronic means of payment for purchases by Canadians at the point of sale (POS), especially in terms of transaction volumes, has continued in recent years.² In particular, the credit card share of POS purchases has continued to rise, at the expense of both cash and debit cards. At the same time, as shown in **Chart 1**, the annual rate of growth in the value of bank notes in circulation has remained similar to that for gross domestic product.

◀ *The gradual shift away from cash toward electronic means of payment has continued*

Chart 1: The ratio of bank notes outstanding to GDP



Notes: The chart shows the value of bank notes outstanding divided by nominal gross domestic product (GDP). The GDP values used are the unadjusted income-based nominal GDP from Statistics Canada. The value of bank notes outstanding is measured by the yearly average value of bank notes in circulation.

Sources: Statistics Canada and Bank of Canada calculations

Last observation: December 2013

Innovation in retail POS and online payment systems continues to be significant, particularly in enhancing the speed and convenience of the payment process for lower-value transactions, an area where cash still dominates. Payment products with a contactless or “tap-and-go” feature are the best example of this type of innovation.³ Contactless credit cards, in particular, are seeing strong growth in use, while Interac debit cards with the tap-and-go feature (“Flash”) are at a relatively early stage of market development.⁴

◀ *Innovation in retail point-of-sale and online payment systems continues to be significant, particularly for lower-value transactions, an area where cash still dominates*

Mobile wallet products, typically the outcome of partnerships between financial institutions and mobile phone companies, are currently being used in Canada mainly as a novel way to make POS purchases involving

² For a discussion of longer-term trends in the use of retail payment instruments in Canada, see Arango et al. (2012).

³ For example, the number of users of contactless payment cards is estimated to have nearly quadrupled between 2009 and 2013 (12.5 million), while the number of payment terminals able to accept tap-and-go cards also rose rapidly over this period (Technology Strategies International 2014).

⁴ However, since 2012, a growing number of major retailers have started to accept Interac debit cards with the Flash feature.

tap-and-go transactions from credit card accounts. Many of these mobile wallet products are in the early stages of expanding consumer payment choices to include all payment card accounts as well as retailer-specific rewards programs. To date, potential customers have been able to use only a limited selection of smartphone models that generally have a Subscriber Identity Module (SIM) card with near field communication (NFC) technology capability inside the phone.

New payment acceptance products have also been introduced in the past three years that make it feasible for merchants to use smartphones or other mobile devices to accept credit card payments. These products are more cost-effective than conventional payment terminals for smaller retailers and for merchants that do not have a fixed location. Such unconventional merchants have begun to use these products to some degree. Visa and MasterCard have recently made voluntary commitments to reduce the fees they charge merchants for accepting credit cards to an average 1.50 per cent from 1.65 per cent for a five-year period (Department of Finance Canada 2014)⁵; this fee reduction should make this payment method slightly more attractive for merchants.

In mid-April, the federal government released an update to the *Code of Conduct for the Credit and Debit Card Industry in Canada* to address unfair business practices and improve transparency for both merchants and consumers (Department of Finance Canada 2015). Among the new provisions was a requirement that the recent reductions in interchange rates be fully passed-through to merchants because merchants would otherwise be allowed to cancel contracts without penalty.

Digital currencies, such as Bitcoin, have also emerged in the past few years⁶; however, their overall functionality, acceptance and use remain extremely limited in Canada and elsewhere. They appear to be most useful for online transactions and are also often treated more as a financial asset rather than a means of exchange, so it is likely that they currently have little impact on the use of cash.

2013 Methods-of-Payment Survey Methodology

The objective of the 2013 MOP Survey was to (i) measure the various payment instruments that consumers are adopting and using, (ii) provide a detailed picture of consumers' cash-management practices, (iii) describe payment patterns in terms of demographics and POS characteristics, and (iv) elicit consumers' perceptions of the various payment instruments. The types of payment channels covered in the survey include payments at the POS, person-to-person (P2P) payments and online payments. As in most diary studies, however, recurrent bill payments (such as for mortgages or rent) are excluded. Henry, Huynh and Shen (2015) provide a detailed discussion of the 2013 MOP Survey.

In terms of survey design, the 2013 MOP Survey retains most of the core of the 2009 MOP Survey to facilitate comparison. However, in the 2013 MOP Survey, the three-day diary incorporated improvements in the

⁵ More specifically, the commitment concerns the interchange rates established by a credit card network for fees paid by an acquirer to a credit card issuer in relation to a credit card transaction. An acquirer is a participant in a payment network that provides services to allow them to accept payment card transactions. Interchange rates represent the largest part of the fees paid by merchants to their acquirer to facilitate credit card transactions.

⁶ For a discussion of digital currencies, see Fung and Halaburda (2014) or the e-money section on the Bank's website at <http://www.bankofcanada.ca/research/e-money>.

measurement of cash-management practices, such as asking respondents to provide more information on how cash was used in addition to making POS purchases (e.g., storing cash at home for emergencies). The 2013 survey questionnaire also collected more detailed information on alternative payment methods to cash and conventional debit and credit cards.⁷ In total, about 3,600 respondents from across the country participated in the survey. Their responses were weighted to ensure that the sample is representative of the Canadian population and to help correct for coverage and non-response bias.⁸

Major Findings of the 2013 Methods-of-Payment Survey

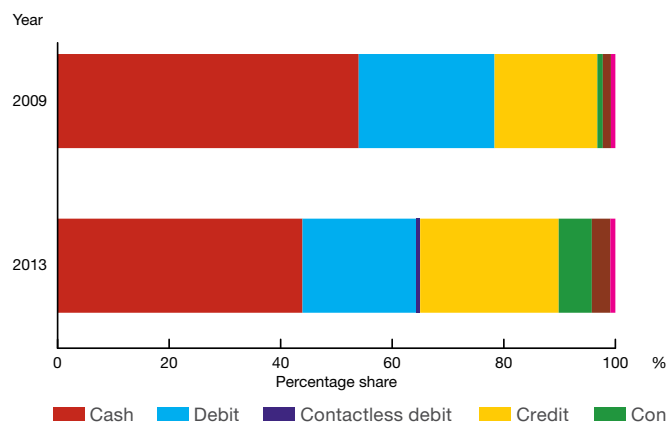
According to the survey results, cash accounted for about 44 per cent of the volume and 23 per cent of the value of payments (Chart 2). Relative to the 2009 MOP Survey, this constituted about a 10-percentage-point decrease in volume and virtually no change in value. Debit card use decreased in terms of both volume and value. In contrast, credit cards made significant inroads, particularly in their volume share, with an increase of 11 percentage points; a large part of this rise was due to the tripling of contactless credit card transactions. Stored-value cards also saw an increase in use. The findings of both the decreased cash volume share and almost no change in the value share are of considerable interest, and factors behind these developments, will be analyzed in detail in the remainder of this article.

◀ Cash accounted for about 44 per cent of the volume and 23 per cent of the value of payments

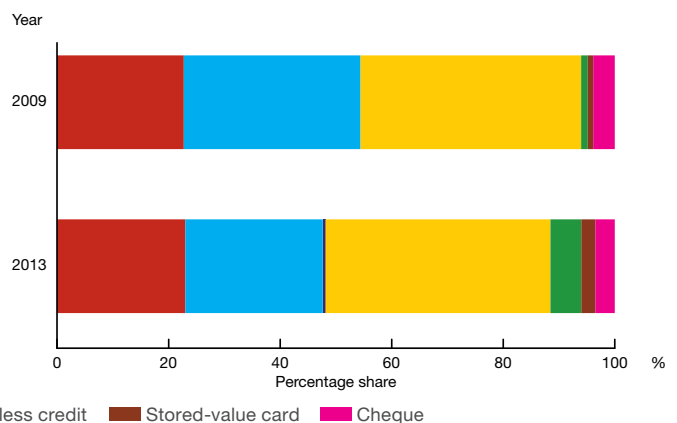
The use of cash tends to vary across demographic groupings based on region, age, income and education. Table 1 shows the shifts in the use of cash between 2009 and 2013 for these selected groups. In terms of volume, the cash share decreased across all regions, as well as age, income and education groups, as the volume of credit card use increased. In terms of value, however, the share of cash payments edged up in some regions

Chart 2: Payment shares

a. By volume



b. By value



Notes: The charts show the proportion of the total volume and value of transactions by method of payment, across all diaries. The scope of the surveys is to measure payments at the point of sale, person-to-person and online. Transaction values include cashback by debit card. However, as in most diary studies, recurrent bill payments (i.e., mortgages or rent) are excluded.

Sources: 2009 and 2013 Methods-of-Payment Surveys (2009 diary and 2013 survey questionnaire weights used)

⁷ Bagnall et al. (2014) discuss results for Australia, Austria, Canada, France, Germany, the Netherlands and the United States. In addition, they provide an in-depth discussion and comparison of the usefulness of payment diaries to measure cash and non-cash payments across the seven countries. However, payment diaries have also been used in Denmark and Hungary.

⁸ Vincent (2015) provides a detailed technical discussion of the statistical methodology used to ensure a nationally representative sample, while Chen and Shen (2015) discuss the methodological approach for constructing confidence intervals.

Table 1: Cash use by demographic groups

Per cent

	Volume		Value	
	2009	2013	2009	2013
Overall	53.6	43.9	22.9	23.1
Region				
Atlantic	57.5	43.2	25.1	29.2
Quebec	53.8	44.4	24.3	25.6
Ontario	56.5	43.2	22.7	21.1
West	50.5	44.6	21.2	22.6
Age				
18–34	48.7	40.8	22.9	24.6
35–54	54.1	40.1	23.0	19.5
55–75	58.8	49.3	22.8	23.8
Income				
Low	60.4	52.0	31.6	31.8
Medium	56.3	45.2	24.4	23.1
High	48.1	35.7	17.4	16.7
Education				
High school	60.6	49.5	33.0	30.8
Technical/comm. college	56.1	42.3	24.0	21.8
University	48.6	38.5	16.6	16.2

Notes: These shares include only purchases and exclude automated banking machine withdrawals or cashback at the point of sale. Data are from the 2009 and 2013 MOP diaries.

(Atlantic, Quebec and West) and among the 18–34 and 55–75 age groups. In contrast, the value share of credit card use increased in virtually every demographic category. The largest gains were in the Atlantic and West regions, among the 35–54 age group and low-income respondents.

In both 2009 and 2013, cash was used mostly for travel/parking, entertainment/meals and other types of goods and services (i.e., financial services, charities and in specialty shops) with transaction volume shares over 50 per cent (Table 2). Cash was also the main payment instrument for P2P transactions, accounting for 69 per cent in volume and 38 per cent in value in 2013. The types of goods and services that had a large decrease in volume were entertainment/meals (69 per cent to 56 per cent), travel/parking (74 per cent to 57 per cent) and other (65 per cent to 54 per cent). One possible reason for the decrease in volume was the increase in the use of contactless credit cards. Chart 3 shows that the cash volume share fell for every transaction value range, but the cash value share increased for purchases above \$50.

Chart 4 provides a measure of consumer perceptions of the relative importance of using cash versus using debit and credit cards. In the 2013 MOP Survey, cost and security were respondents' highest-rated reasons for using cash rather than debit and credit cards, consistent with the 2009 MOP Survey. Also, as shown in Table 2, the cash value share increased considerably for the types of goods and services for which ease or convenience is unlikely to be the most important reason for using cash, such as health care (10 per cent to 16 per cent), professional and personal services (12 per cent to 25 per cent) and durables (10 per cent to 17 per cent). Some of these increases may be driven by cost or security concerns.

◀ In both 2009 and 2013, cash was used mostly for travel/parking, entertainment/meals and other types of goods and services

Table 2: Cash payment shares by type of good or service and channel
Per cent

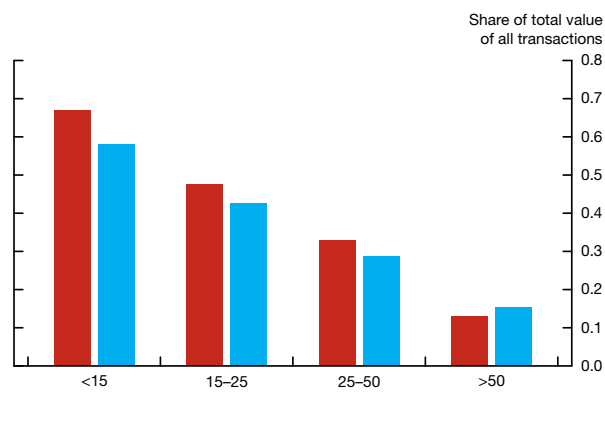
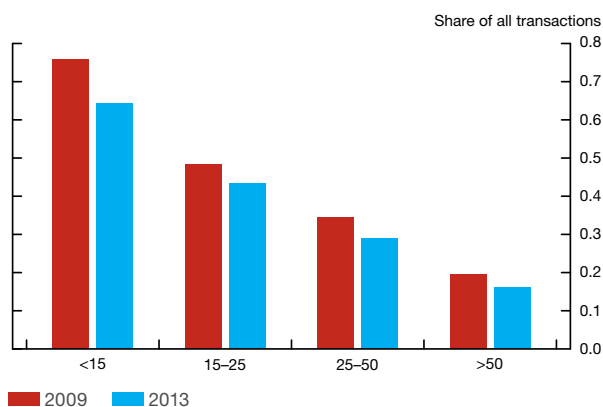
Type of good or service	Volume		Value	
	2009	2013	2009	2013
Durable goods	35	29	10	17
Entertainment/meals	69	56	45	37
Gasoline	36	22	29	17
Groceries/drugs	49	39	28	24
Health care	38	35	10	16
Hobbies/sporting goods	46	44	18	19
Personal attire	36	26	16	13
Professional/personal services	42	41	12	25
Travel/parking	74	57	36	22
Other goods and services	65	54	24	26
Channel				
Mail	12	11	3	4
Online	10	5	6	1
Person to person	80	69	47	38
Phone	30	9	7	1
Store	51	38	22	18
Other	71	51	24	18

Note: The table shows the proportion of the total volume and value of transactions for cash, conditional on the type of good or service purchased or the channel through which the transaction is undertaken. Data are from the 2009 and 2013 MOP diaries.

Chart 3: Cash shares for selected transaction value ranges (in dollars)

a. Volume

b. Value



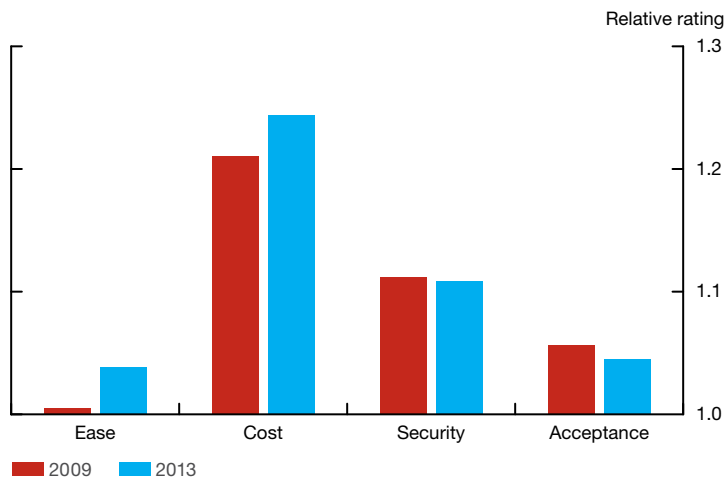
Source: Bank of Canada calculations based on the 2009 and 2013 MOP diaries

Last observation: December 2013

Cash is still mainly used for small-value transactions, but its share for such transactions is decreasing. The continued use of cash is consistent with research by Arango, Huynh and Sabetti (2015) and Wakamori and Welte (2012), who predict that, despite the possibility of increased merchant acceptance of cards, cash is still the preferred method of payment because of its low cost, security and ease of use. However, the decrease in the volume of cash use is in line with the findings in research based on the 2009 MOP Survey conducted by Fung, Huynh and Sabetti (2014), who predict that

◀ Cash is preferred because it is perceived to be low cost, secure and easy to use

Chart 4: Perception ratings of cash relative to debit and credit cards



Notes: The columns indicate the perceptions of cash relative to payment cards (debit and credit cards) with respect to different attributes. The attributes for which respondents had a positive perception of the use of cash have a rating greater than 1.

Source: Bank of Canada calculations based on the 2009 and 2013 MOP diaries

Last observation: December 2013

the introduction of contactless credit and stored-value cards would lead to a decrease in cash use, particularly in terms of volume. Further, Chen, Felt and Huynh (2014) use longitudinal data (2010–12) from the *Canadian Financial Monitor* and find a smaller albeit statistically significant reduction in cash use resulting from the introduction of contactless credit cards.⁹ These findings indicate that it is important to continue to study and monitor the use of payment innovations.

The decrease in the volume share of cash use is not surprising in light of the introduction of payment innovations such as contactless payment cards and some stored-value cards, which were designed to mimic the desirable properties of cash, i.e., they are easy to use and fast.¹⁰ Using data from the 2013 MOP Survey, **Table 3** shows the proportions of those who have used a payment innovation at least once in the past year. Overall, contactless credit card use (33 per cent) was much more common than contactless debit card use (9 per cent).¹¹ About 48 per cent of respondents had used a stored-value card of some sort. Overall, mobile payment use was low at 7 per cent, with the highest propensity to use it among 18–34 year olds (16 per cent). For online payment services using Interac Online, credit cards and online payment accounts (e.g., PayPal, Google Wallet), the rates of penetration were 27 per cent, 41 per cent and 31 per cent, respectively. Not surprisingly, the 18–34 year olds, those with higher incomes or university-educated respondents had the highest rate for use of payment innovations.

⁹ Increased use of contactless credit cards could also decrease debit card use. This effect requires more data to gain a better understanding.

¹⁰ Contactless credit cards were still at a nascent stage of introduction into the marketplace in 2009.

¹¹ Contactless debit cards were introduced only in 2011.

Table 3: Use of payment innovations
Per cent

	Contactless				Online payment methods		
	CTDC	CTCC	SVC	Mobile	Interac	Credit	Account
Overall	9	33	48	7	27	41	31
Region							
Atlantic	14	30	54	7	28	38	29
Quebec	8	24	32	5	33	45	31
Ontario	11	42	52	7	27	41	33
West	7	31	53	7	22	37	29
Age							
18–34	13	36	59	16	40	53	48
35–54	9	34	52	5	29	45	33
55–75	6	31	35	1	15	28	16
Income							
Low	8	21	38	4	20	26	22
Medium	10	36	50	6	26	40	30
High	9	44	56	10	35	56	42
Education							
High school	9	23	40	5	20	26	22
Technical/comm. college	10	34	51	7	30	45	35
University	7	47	52	9	31	55	39

Notes: CTDC: contactless debit card; CTCC: contactless credit card; SVC: any stored-value card, including those issued by Visa and MasterCard and store-branded cards; Mobile: mobile payment application. Interac, Credit and Account represent online payments made using Interac Online/e-Transfer, a credit card and an online payment account, respectively. The table shows the proportion of respondents who reported using a particular method of payment at least once in the past year out of all those who answered the corresponding question in the survey questionnaire (SQ). Data are from the 2013 MOP SQ (SQ weights used).

Since there has been a decrease in cash transaction volumes and a marked increase in the use of contactless credit card payments, the question remains whether people are still retaining cash holdings. **Table 4** shows that the number of cash withdrawals from ABMs fell substantially from an average of 4.4 per month in 2009 to 2.7 in 2013. However, the mean amount withdrawn remained relatively stable at \$118 in 2013. During this time, withdrawals from a bank teller and cashback requests at the POS both fell from 1.6 to 0.7 and 1.9 to 0.7, respectively. Compared with 2009, the variation across demographic groups was generally similar in 2013. Overall, cash holdings on hand increased from an average \$70 to \$84. The increases in cash on hand were the largest in the Atlantic and Ontario, among those in the 55–75 age group and with medium-income earners.

◀ Overall, cash holdings on hand increased

Since the number of withdrawals has decreased and the amount withdrawn has remained relatively unchanged, while, on average, cash holdings have increased, it appears there has been a reduction in the turnover but not a disappearance of cash. Huynh, Schmidt-Dengler and Stix (2014) compare Canada (2009 MOP Survey results) with Austria, a cash-intensive country, and find that an increased acceptance of card payment methods reduces cash use and cash holdings, although they predict that cash will not disappear. They indicate that part of the motive to hold cash is precautionary, for situations when cash is needed because cards are not accepted. To understand whether cash was held for non-transactional purposes, considerable effort was expended in the 2013 MOP Survey to measure other cash holdings, including questions on whether cash was stored at home for emergencies. Since there was a wide dispersion of responses, we report the median amount of other cash held, which was approximately \$300.

◀ Cash is held for situations when cards are not accepted

Table 4: Cash withdrawals and cash holdings

	ABM frequency (per month)		ABM mean amount (\$)		Cash on hand mean (\$)	
	2009	2013	2009	2013	2009	2013
Overall	4.4	2.7	115	118	70	84
Region						
Atlantic	5.7	2.8	111	126	75	93
Quebec	3.5	2.9	132	136	65	76
Ontario	4.7	2.9	109	111	66	89
West	4.3	2.4	114	113	76	82
Age						
18–34	4.8	2.7	96	96	56	61
35–54	4.7	2.9	115	113	68	69
55–75	3.5	2.7	135	135	86	108
Income						
Low	4.4	2.6	122	117	65	75
Medium	4.4	3.0	111	118	69	95
High	4.4	2.6	112	118	74	82
Education						
High school	4.1	3.0	108	123	72	87
Technical/comm. college	4.7	2.7	124	114	67	79
University	4.3	2.4	110	117	70	85

Notes: Calculations of the mean withdrawal exclude zero withdrawal amounts. Data are from the 2009 and 2013 MOP survey questionnaire (SQ) (SQ weights used).

Comparison with Australia and the United States

To better understand the use of cash in Canada, it is instructive to compare it with other countries. In a cross-country comparison involving seven countries, Bagnall et al. (2014) find that, although cash use is the lowest in Canada, Australia and the United States, it has not disappeared. Both Australia and Canada conducted payment diary surveys in 2013, while the United States has an ongoing annual payment survey, allowing the comparison of information on the evolution of cash use in the three countries (Table 5).¹² Following are some key observations.

First, cash is still widely used, especially for small-value transactions. In all three countries, cash accounted for 40 per cent or more in volume shares and between 14 per cent and 23 per cent in value shares. The average value of a cash transaction was only about 40 per cent of the average value of all transactions, and consumers conducted an average of about two transactions per day with one of them being a cash payment.

Second, cash shares continue to decline in all three countries. Compared with its 2010 survey, both the value and volume shares of cash in Australia declined. In Canada and the United States, however, only the volume share decreased.

◀ *In Canada, Australia and the United States, cash is still widely used, especially for small-value transactions*

¹² Bagnall et al. (2014) compare 2009 MOP Survey data for Canada with 2010 and 2012 data for Australia and the United States, respectively. Unlike Bagnall et al., the numbers reported here are not harmonized and are in local currencies.

Table 5: Comparison of cash use in Canada, Australia and the United States

Cash spending	Canada		Australia		United States	
Cash share (volume)	44%		47%		40%	
Cash share (value)	23%		18%		14%	
Average value of all payments	\$43		\$67		\$59	
Average value of cash payments	\$18		\$26		\$21	
Cash share (volume) in person-to-person (P2P) payments	69%		55%		67%	
Average value of P2P cash payments	\$30		\$98		\$32	

Cash withdrawal	Canada		Australia		United States	
	Number per month ^a	Value per withdrawal	Number per month ^a	Value per withdrawal	Number per month ^a	Value per withdrawal
Automated banking machine	2.7	\$118	2.8	\$138	1.3	\$105
Bank teller	0.7	\$236	0.4	\$297	0.6	\$217
Cashback	0.7	\$43	1.6	\$71	0.5	\$30

Cash holdings	Canada	Australia	United States
Average cash holdings in wallet	\$84	\$112	\$64
Average number of bank notes	4.4	5.0	5.7

a. The monthly figures are calculated by multiplying the number of withdrawals per week by 4.

Notes: Dollar values are in local currencies. Canadian data on payments and the number of bank notes are from the 2013 MOP diaries, while average and median cash holdings are based on respondent-level data from the 2013 MOP survey questionnaire. Results for Australia are based on the 2013 Survey of Consumers' Use of Payments Methods and are taken from Meredith, Kenney and Hatzvi (2014), Ossolinski, Lam and Emery (2014), and additional Reserve Bank of Australia calculations. Data for the United States are from the 2012 Diary of Consumer Payment Choice. See Bennett and Schuh (forthcoming).

Third, cash is still being used frequently for P2P payments, accounting for at least two-thirds of these transactions in Canada and the United States and over half in Australia. The average values ranged from Can\$30 for Canada and US\$32 in the United States to Aus\$98 in Australia. In all three countries, P2P payments were considerably larger than the average value of a cash payment.¹³

Fourth, ABMs remain the major source of cash, although people were using ABMs less often than in previous years. In 2013, Canadians and Australians withdrew cash from an ABM about three times a month, while Americans did so about once. In terms of value, on average, Canadians withdrew enough cash to pay for seven average cash transactions, while Australians and Americans withdrew enough for about five transactions.¹⁴ This result suggests that while Canadians used an ABM as often as Australians, they tended to withdraw more cash.

Finally, Americans and Canadians had average cash holdings in their wallets of US\$64 and Can\$84, respectively, while the Australians held the largest amount of Aus\$112. On average, Canadians held enough cash on hand to pay for almost five cash transactions, while Australians and Americans could pay for about four and three transactions, respectively. Again, this result is consistent with the observation that Canadians tended to withdraw more cash relative to the value of their average cash transactions. However,

¹³ The definitions of P2P are not harmonized across countries.

¹⁴ Comparing the dollar value of cash withdrawals or cash holdings across countries is problematic because of differences in the exchange rate and purchasing power. One simple measure of cash withdrawals and holdings for comparison is the ratio of the average cash withdrawal or holding to the average cash purchase value, which provides a sense of the number of possible cash purchases that could be made with cash withdrawn or cash on hand. For example, in Canada, the average value of an ABM withdrawal is \$118 and the average value of a cash payment is \$18; thus, the cash withdrawn from an ABM could be enough to pay for seven cash transactions, on average.

Canadians held the lowest number of bank notes at about four compared with five for Australians, while Americans held the most at about six, possibly because of the use of the \$1 bank note.

Conclusions

The 2013 MOP Survey provides detailed data on cash use and payment habits. Many Canadians are still using cash for payments, especially for small-value transactions. However, relative to the 2009 MOP Survey, cash use in terms of volume has fallen, while the cash value share has remained relatively constant. This decrease is partly due to the increased use of payment innovations, such as contactless cards and stored-value cards, that compete with cash in terms of ease of use for small-value transactions. Respondents to the 2013 MOP Survey rated the attributes of cost and security higher than acceptance and ease in their decisions to use cash. The reduction in counterfeiting in recent years, along with the launch, beginning in late 2011, of the polymer series of bank notes, with their enhanced security features and increased durability, may have contributed both to the high perception ratings of cost and security and the increase in the number of large-value cash transactions (above \$50). These possible relationships, however, warrant further study.

Advances in technology and new business models may result in more payment innovations that could further affect the use of cash in Canada. The MOP Survey provides insights into consumer adoption and use of a wide spectrum of payment instruments. In addition, it provides important information on both preferences for different payment methods and perceptions regarding merchant acceptance of different payment instruments. In addition to conducting more consumer MOP surveys, the Bank of Canada is currently undertaking a cost-of-payments study to address issues regarding merchant cost and acceptance of cash and payment cards. The data from the MOP surveys and the cost study could be combined to investigate issues related to the interactions of consumers with merchants, which are important to understanding cash use and other payment methods in a market characterized as two-sided.¹⁵

◀ *Advances in technology and new business models may result in more payment innovations that could further affect the use of cash in Canada*

¹⁵ See Rysman (2009) for more information on two-sided markets.

Literature Cited

Arango, C., K. P. Huynh, B. Fung and G. Stuber. 2012. "The Changing Landscape for Retail Payments in Canada and the Implications for the Demand for Cash." *Bank of Canada Review* (Autumn): 31–40.

Arango, C., K. P. Huynh and L. Sabetti. 2015. "Consumer Payment Choice: Merchant Card Acceptance Versus Pricing Incentives." *Journal of Banking and Finance* 55: 130–141.

Arango, C. and A. Welte. 2012. "The Bank of Canada's 2009 Methods-of-Payment Survey: Methodology and Key Results." Bank of Canada Discussion Paper No. 2012-6.

- Bagnall, J., D. Bounie, K. P. Huynh, A. Kosse, T. Schmidt, S. Schuh and H. Stix. 2014. "Consumer Cash Usage: A Cross-Country Comparison with Payment Diary Survey Data." Bank of Canada Working Paper No. 2014-20.
- Bennett, B. and S. Schuh (forthcoming). "The 2012 Diary of Consumer Payment Choice." Research Data Report. Federal Reserve Bank of Boston.
- Chen, H., M.-H. Felt and K. P. Huynh. 2014. "Retail Payment Innovations and Cash Usage: Accounting for Attrition Using Refreshment Samples." Bank of Canada Working Paper No. 2014-27.
- Chen, H. and Q. R. Shen. 2015. "Variance Estimation for Survey-Weighted Data Using Bootstrap Resampling Methods: 2013 Methods-of-Payment Survey Questionnaire." Bank of Canada Technical Report No. 104.
- Department of Finance Canada. 2014. "Minister of Finance Issues Statement on Voluntary Visa and MasterCard Proposals." Press release, Ottawa, Ontario, 4 November.
- . 2015. "Harper Government Announces New Measures to Protect Consumers and Entrepreneurs." Press release, Ottawa, Ontario, 13 April.
- Fung, B. and H. Halaburda. 2014. "Understanding Platform-Based Digital Currencies." *Bank of Canada Review* (Spring): 12–20.
- Fung, B., K. P. Huynh and L. Sabetti. 2014. "The Impact of Retail Payment Innovations on Cash Usage." *Journal of Financial Market Infrastructures* 3 (1): 3–31.
- Henry, C., K. P. Huynh and Q. R. Shen. 2015. "2013 Methods-of-Payment Survey Results." Bank of Canada Discussion Paper No. 2015–4.
- Huynh, K. P., P. Schmidt-Dengler and H. Stix. 2014. "The Role of Card Acceptance in the Transaction Demand for Money." Bank of Canada Working Paper No. 2014–44.
- Meredith, J., R. Kenney and E. Hatzvi. 2014. "Cash Use in Australia." Reserve Bank of Australia *Bulletin* (June): 43–54.
- Ossolinski, C., T. Lam and D. Emery. 2014. "The Changing Way We Pay: Trends in Consumer Payments." Reserve Bank of Australia Research Discussion Paper No. 2014-05.
- Rysman, M. 2009. "The Economics of Two-Sided Markets." *Journal of Economic Perspectives* 23 (3):125–43.
- Technology Strategies International Inc. 2014. *Canadian Payments Forecast – 2014*. Available at <http://tsiglobalnet.com/research.html#cpf2014>.
- Vincent, K. 2015. "2013 Methods-of-Payments Survey: Sample Calibration Analysis." Bank of Canada Technical Report No. 103.
- Wakamori, N. and A. Welte. 2012. "Why Do Shoppers Use Cash? Evidence from Shopping Diary Data." Bank of Canada Working Paper No. 2012-24.